REMARKS

Claims 1-16 are presented. Claims 1, 7, 8, 11, 12, 13, 15 and 16 are independent, and the rest are dependent.

Claims 15 and 16 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing particularly point out and distinctly claim the subject matter which applicant regards as the invention. In accordance with the examiner's suggestion, the second "generate" in the phrase noted by the examiner has been linked with the object that causes generation. In particular, claims 15 and 16 recite effecting a multiplication of certain signals and specify that "said multiplication" generates a specified signal. Withdrawal of the rejection under 35 U.S.C. §112, second paragraph, is respectfully requested.

Claims 1-6 are rejected under 35 U.S.C. §102(b) as being anticipated by a U.S. Patent to Counselman No. 4,809,005. The examiner contends that every feature recited in each of those claims is met by the Counselman patent.

The rejection is respectfully traversed. The claims have been amended by amendment of independent claim 1 to recite a W-code signal in place of a first estimate signal. This avoids reading the claim on Counselman. The discussion in section 12 on page 3 of the Office Action of a first estimate signal in Counselman (Fig. 7, item 228) relates to a locally generated C/A code. The amended claims clearly distinguish the invention from the disclosure of Counselman, and withdrawal of the rejection under 35 U.S.C. §102(b) is respectfully requested.

Claims 7-14 are allowable as indicated on Pages 5-7 of the Office Action. Claims 7, 8 and 11, which depended on rejected base claims have been rewritten to include the limitations of the claims respectively referred to. Claims 7-14 are now therefore clearly allowable.

Claims 15 and 16 would be allowable if amended to overcome the rejection under 35 U.S. C. §112, second paragraph, on page 7 of the Office Action. Those claims have been rewritten accordingly, as indicated above, and they are also in condition for allowance.

For the reasons indicated, issuance of a Notice of Allowance is respectfully requested.

If a telephone interview would expedite prosecution of the application, the Examiner is requested to call undersigned counsel.

Respectfully submitted,
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VERSION WITH MARKINGS TO SHOW THE CHANGES MADE

IN THE CLAIMS

Claims 1, 4, 5, 6, 7, 8, 11, 15 and 16 are amended as follows:

--1.   (Amended) An apparatus for tracking signals comprising:

a first tracker for tracking a first component of a first signal and for generating a first [estimate] W-code signal from a second component of the first signal;

a second tracker for tracking a first component of a second signal according to the first [estimate] W-code signal; and

the second component of the first signal has the same pattern as the first component of the second signal.

4.   (Amended) An apparatus according to claim 3, wherein:

the first tracker generates a timing signal in accordance with the timing information for improving the accuracy of the first [estimate] W-code signal.

5.   (Amended) An apparatus according to claim 2, wherein:

the first tracker generates a first local component signal in accordance with the known pattern and combines the local component signal with a version of the first signal to generate the first [estimate] W-code signal.

6.   (Amended) An apparatus according to claim 2, wherein:

the second tracker generates a second local component signal in accordance with the known pattern and combines the second local component signal with at least one version of the second signal to generate at least one second [estimate] W-code signal.

7.   (Amended) [An apparatus according to claim 6, wherein:]
An apparatus for tracking signals comprising:

a first tracker for tracking a first component of a first signal and for generating a first estimate signal from a second component of the first signal; and

a second tracker for tracking a first component of a second signal according to the first estimate signal; wherein:

the second component of the first signal has the same pattern as the first component of the second signal;

the pattern comprises a known pattern combined with an unknown pattern;

the second tracker generates a second local component signal in accordance with the known pattern and combines the second local component signal with at least one version of the second signal to generate at least one second estimate signal; and

the second tracker generates a timing signal in accordance with the timing information for improving the accuracy of the at least one second estimate signal.

8.   (Amended) [An apparatus according to claim 5, wherein:]

An apparatus for tracking signals comprising:

a first tracker for tracking a first component of a first signal and for generating a first estimate signal from a second component of the first signal; and

a second tracker for tracking a first component of a second signal according to the first estimate signal wherein

the second component of the first signal has the same pattern as the first component of the second signal;

the pattern comprises a known pattern combined with an unknown pattern.

the first tracker generates a first local component signal in accordance with the known pattern and combines the local component signal with a version of the first signal to generate the first estimate signal; and

the second tracker combines the first estimate signal with the at least one second estimate signal to provide a tracking signal for tracking the first component of the second signal.

11.   (Amended) [An apparatus according to claim 2, wherein:]

An apparatus for tracking signals comprising:

a first tracker for tracking a first component of a first signal and for generating a first estimate signal from a second component of the first signal; and

a second tracker for tracking a first component of a second signal according to the first estimate signal; wherein:

the second component of the first signal has the same pattern as the first component of the second signal;

the pattern comprises a known pattern combined with an unknown pattern;

the first signal is a GPS L1 signal;

the second signal is a GPS L2 signal;

the first component of the GPS L1 signal is a C/A-code component;

the second component of the GPS L1 signal is a Y-code component;

the first component of the GPS L2 signal is a Y-code component;

the known pattern is a GPS P-code;

the unknown pattern is a GPS W-code[;].

15.   (Amended) A method of semi-codeless tracking for a GPS receiver comprising the steps of:

receiving a GPS L1 signal and generating at least a quadrature baseband version of the GPS L1 signal;

receiving a GPS L2 signal and generating baseband versions of the of the GPS L2 signal;

[multiplying] effecting a multiplication of the quadrature baseband version of the GPS L1 signal with a locally generated version of a P-code used to generate the Y-code component of both the GPS L1 and L2 signals, [to generate] said multiplication generating a first estimate signal related to the W-code used with the P-code to generate the Y-code component;

multiplying the in-phase baseband version of the GPS L2 signal with a locally generated version of the P-code to generate a second estimate signal related to the W-code used with the P-code to generate the Y-code component;

adding the first W-code estimate signal to the second W-code estimate signal to generate a combined W-code estimate signal;

applying the first W-code estimate signal to generate tracking signals for tracking when the GPS receiver has not locked to the GPS L2 signal; and

applying the second W-code estimate signal to generate tracking signals for tracking when the GPS receiver has locked to the GPS L2 signal.

16.   (Amended)   A method of semi-codeless tracking for a GPS receiver

comprising the steps of:

receiving a GPS L1 signal and generating at least a quadrature baseband version of the GPS L1 signal;

receiving a GPS L2 signal and generating baseband versions of the GPS L1 signal;

[multiplying] effecting a multiplication of the quadrature baseband version of the GPS L1 signal with a locally generated version of a P-code used to generate the Y-code component of both the GPS L1 and L2 signals, [to generate] said multiplication generating a first wide-band estimate signal related to the W-code used with the P-code to generate the Y-code component;

integrating the first wide-band estimate signal based on known timing information of the Y-code to generate a first narrow-band W-code estimate signal;

multiplying the in-phase baseband version of the GPS L2 signal with a locally generated version of the P-code to generate a second wide-band estimate signal related to the W-code used with the P-code to generate the Y-code component;

integrating the second wide-band estimate signal based on known timing information of the Y-code to generate a second narrow-band W-code estimate signal;

adding the first narrow-band W-code estimate signal to the second narrow-band W-code estimate signal to generate a combined W-code estimate signal;

applying the first narrow-band W-code estimate signal to generate tracking signals for tracking when the GPS receiver has not locked to the GPS L2 signal; and

applying the second narrow band W-code estimate signal to generate tracking when the GPS receiver has locked to the GPS L2 signal.